



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

11A

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,985	12/22/2003	Shui-Ming Cheng	N1085-00168	9060

8933 7590 04/05/2007

DUANE MORRIS, LLP
IP DEPARTMENT
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103-4196

EXAMINER

SCHILLINGER, LAURA M

ART UNIT	PAPER NUMBER
----------	--------------

2813

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/743,985

Applicant(s)

CHENG ET AL.

Examiner

Laura M. Schillinger

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19 and 36 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11, 12 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Newly submitted claim 36 and amended claim 13 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Newly added claim 36 pertains to a gate oxide having the same thickness; in contrast the originally elected species required thicker gate oxides.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 36 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

Claims 11-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant's amended claim language requires oxygen ions providing ***discrete implant regions***- there is no support for discrete implant regions in the Applicant's specification.

Important to note: claims 36 and 13 contain new matter- the description of layer 132 in Fig.2E is that of having a thin and thicker gate oxide material, not uniform as suggested by Applicant's arguments.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al., "Sub-5 um Multiple-Thickness Gate Oxide Technology Using Oxygen Implantation," Int. Electron Device Meeting (IEDM), San Francisco, paper 21.1.1 (1998).

King teaches the following claimed limitations as cited below:

11. A device having a gate comprising:

O ions providing discrete implants (Col.4, lines: 50-60) regions in a substrate of a device (Introduction), the discrete implant regions extending to a surface of the substrate; and

One or more additional gate regions covering all implants under the one or more additional gate regions, the ions forming thicker gate oxide regions (Introduction/New Technology), and reducing substrate resistance under each of the additional gate regions (Fig.3)

12. The device of claim 11, further comprising:

implanted ions in the substrate, the one or more additional gate regions covering the implanted ions (New Technology).

14. The device of claim 11, further comprising:

a gate of the device (Fig.1).

15. The device of claim 11, further comprising

a gate electrode layer forming a device gate and the one or more additional gate regions (Fig.1).

16. The device of claim 11, further comprising:

a device gate and the one or more additional gate regions being formed from a gate electrode layer (Fig.1); and

wherein the gate oxide layer is under the gate and under the one or more additional gate regions (Fig.1).

17. The device of claim 11, further comprising:

the gate oxide layer including a thin gate oxide layer having a thicker gate oxide covering the ions (Fig.1);

a device gate on the thin gate oxide layer (Fig.1); and

the one or more additional gate regions being on the thicker gate oxide (Fig.1).

Art Unit: 2813

18. The device of claim 11, further comprising:

the thicker gate oxide being a selective epitaxy growth (Introduction).

19. The device of claim 11, further comprising

the substrate having STI enclosures for the ions (Col.4, lines: 25-35).

However, King et al teaches that the substrate is made of silicon but fails to specify that the substrate is SOI. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify King's teachings to include an SOI substrate. Such substrates are well known and conventional in the semiconductor art and it would have been understood that silicon substrates may include SOI. Moreover, King teaches to implement LOCOS isolation, but fails to specify STI isolation as recited in claim 19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify King's teachings to include STI rather than LOCOS because both effectuate the same results and are well known interchangeable isolation techniques.

Response to Arguments

Applicant's arguments filed 2/28/07 have been fully considered but they are not persuasive. Applicant argues that the thinner and thicker gate oxide regions taught by King do not anticipate Applicant's newly added claim language. However, claim 11 does not require that the gate oxide thickness be the same. Moreover as explained by the Examiner above, the original claims required the differing thicknesses and some of the dependent claim limitations

Art Unit: 2813

still require differing thicknesses- this was the Applicant's originally elected species. Applicant is now attempting to overcome prior art by adding new claims and amending old claims to recite a different species than that of the originally elected claims (withdrawn claims 13 and 36).

Important to note: claims 36 and 13 contain new matter- the description of layer 132 in Fig.2E is that of having a thin and thicker gate oxide material, not uniform as suggested by

Applicant's arguments. Such claims are withdrawn and such arguments are not persuasive in overcoming the prior art rejection of claim 11. Lastly, the suggestion that the "discrete" region overcomes the prior art rejection is also not persuasive because as explained above, there is no support for a discrete region in Applicant's specification. This constitutes new matter. Lastly, King shows only portions of the substrate and gate are subject to the O ion implant and therefore, the implanted regions can be construed as "discrete".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2813

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Laura M Schillinger', with a large, stylized flourish at the end.

Laura M Schillinger
Primary Examiner
Art Unit 2813

11/20/06